STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.state.mo.us

SEP 18 2002

Mr. Ray Plieness, Deputy Manager
United States Department of Energy
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

RE: ***Long Term Stewardship Plan for the Weldon Spring Site, St. Charles County, Missouri, Comments on Draft Plan issued August 9, 2002***
DOE Document Number GJO-2002-342-TAC GJO-LWEL 1.1-1

Dear Mr. Plieness:

Thank you for the opportunity to comment on the Department of Energy's (DOE) August 9, 2002, Long-Term Stewardship Plan for the Weldon Spring Site, in St. Charles County, Missouri. This is among the most significant issues remaining to be addressed at the Weldon Spring site, along with contaminated groundwater, and it is critical that we all work toward a final document that will provide for the level of care that corresponds to the long life of the radioactive waste and residue that remain. My staff has conducted a review of this document and, while we find this to be in a more readable format than previous documents, significant deficiencies remain. Our more detailed technical comments are enclosed.

At the outset, I want to thank you for conducting the recent workshops on Long-Term Stewardship. We applaud DOE's candid acknowledgement, made at the August 28, 2002, workshop, of significant shortcomings in the draft Long-Term Stewardship Plan. The information presented, and the chance for Missouri citizens to provide input, is particularly important since the disposal cell and residual contamination will remain in our community, essentially forever. Additionally, it is of vital importance that the plan is clear about who is responsible, what specifically will be done, how and when those actions will be taken, and who will have enforcement authority, if needed. A secure method of funding for those activities must also be determined.

L-1 Progress should be made just as it has in the past at the Weldon Spring site – through honest work in the field, supported by rigorous technical and scientific analysis and conscious collaboration between involved parties. We do not intend to allow the federal government to walk away from its responsibility for perpetual stewardship of the site. This includes a variety of tasks necessary to protect human health and the environment, as well as the economic vitality

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L-1 cont.

and peace of mind of the community. We are gratified at the recent progress, but are acutely aware that much remains to be done. We are at a crucial crossroads in finalizing the cleanup and establishing an effective and sustainable long-term stewardship plan for the site, and look forward to working with you toward that goal.

Response L-1: DOE appreciates MDNR's summary of the collaborative efforts which have contributed to the success of the project. We take exception to the suggestion that the federal government might "walk away from its responsibility for perpetual stewardship of the site." DOE has never taken any action which could be interpreted in this way.

L-2

In summary, we remain deeply concerned about the Weldon Spring Site, despite recently renewed progress. In national documents, DOE has characterized cleanup at the Weldon Spring site as complete, when significant issues regarding residual groundwater contamination remain unresolved. In fact, DOE has not addressed the contaminated groundwater on the site, and has not yet provided a workable long-term stewardship plan. Therefore, we cannot agree with your characterization of the cleanup as "complete." As we approach the end of the federal fiscal year on September 30th, it is clear that much work needs to be done before the site cleanup can be considered "complete," as DOE has asserted for FY 2002, in documents presented to the U.S. Congress. We urge you to refrain from referring to the cleanup as "complete" and to correct those documents where DOE has declared final success prematurely.

Response L-2: DOE fully recognizes that the work at the Weldon Spring site is not complete and looks forward to making progress toward a final decision on the Groundwater Operable Unit.

The draft LTS Plan is an improvement over previous versions but remains inadequate in several areas. We agree that many of the department's previous comments have been addressed in this revision and the document has been redrafted in a more readable and usable format. However, significant areas need to be enhanced or strengthened to develop a robust plan for now and into the future and many issues and previous comments remain un-addressed. I am particularly thankful for Dave Geiser's commitment at the September 28, 2002, Stewardship Workshop, that the Department of Energy will take the time and effort to do "whatever it takes" to develop an all-encompassing Stewardship Plan for future care of this site. We fully support the commitment to completing an acceptable plan and the focused workshops proposed to help reach this goal.

Specific deficiencies noted in the current proposed plan include:

L-3

- The plan should include specific provisions to keep the public informed of future activities and a way to encourage public participation in significant future decisions.

Response L-3: The public participation section of the LTS Plan will undergo significant revision to expand in this area. The focused public work session on October 23, 2002, will also provide additional input regarding public participation.

L-4

- The plan identifies Long Term Monitoring and Maintenance and Institutional Controls as significant components of future protection for this site. Additional details have been provided compared to the last draft; however, more detail is needed in each of these areas. I anticipate a final plan, with supporting attachments, which can be used by regulators and other competent environmental professionals to evaluate and manage the site. This will include specific instructions on who, what, when, and how the multiple tasks involved will be accomplished. Baseline conditions, anticipated changes, and design tolerances must be clearly defined.

Response L-4: Additional detail will be provided in the next version of the LTS Plan but supporting referenced documents will be needed to assure all appropriate information is considered.

L-5

- The plan has components of a "primary" document. under the CERCLA process, but is not being developed from that strict approach. We are currently comfortable with this approach and agree that a better final product will ensue as the final plan agreed to will ultimately be subject to the CERCLA review process.

Response L-5: We agree that elements of the LTS Plan contain CERCLA enforceable commitments. In fact, much of the detailed information is excerpted from CERCLA documents such as Remedial Design/Remedial Action Workplans which have already been subject to CERCLA review and comment periods. DOE plans to continue to make mutually agreeable minor revisions and then submit the plan for formal CERCLA approval. Information which is required to meet the CERCLA requirements of an Operations and Maintenance Plan are in this stewardship plan as "will" statements. DOE will use the term "may" if the planned activity is not enforceable as a primary CERCLA document. We appreciate MDNR's understanding as we further develop the scope of the LTS Plan.

L-6

- An enforceable agreement, which includes all parties, must be secured. We renew our request for the current Federal Facilities Agreement to be revised to include the state of Missouri as a legal party to the agreement.

Response L-6: As previously indicated in correspondence from Assistant Secretary Jessie Roberson, DOE will not further pursue inclusion of the MDNR in the Federal Facility Agreement at the Weldon Spring Site. EPA has agreed to take the lead in developing a new agreement to cover the post-closure activities at the site with the goal of including both EPA Region VII and MDNR in this agreement.

L-7

- Complete cost estimates, including the cost of appropriate oversight, need to be documented and a process for developing a secure source of future funding (comparable to the Trust Fund in Tennessee), that is not limited by the uncertainties of annual federal appropriations, must be identified.

Response L-7: A cost estimate for stewardship activities will be included in the next version of the LTS Plan. This will include some funding for local oversight. Options other than annual appropriations are not currently available for stewardship funding.

Enclosed with this letter are specific comments drafted by DNR staff indicating reactions to our initial reading of the plan. Additional comments will follow as we continue to evaluate this latest proposal. Evaluation of overall site and area issues and the direction taken to address residual groundwater contamination at the site will also be made.

Again, I want to thank you for the renewed progress in developing this important plan and process and look forward to DOE follow-through on the many commitments made at the August 28, 2002, Stewardship Workshop. I do want to assure you that we share your commitment to do "whatever it takes", for as long as it takes, to reach that goal.

If you have any questions or comments on the enclosed information please contact Ms. Mimi Garstang of my staff at (573) 368-2101, or contact us in writing at P.O. Box 176, Jefferson City, MO 65102.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

Stephen Mahfood
Director

Enclosure

c: Ms. Pamela Thompson, U. S. Department of Energy
Mr. Dave Geiser, Office of Long-Term Stewardship, U.S. Department of Energy
Mr. Mike Duvall, St. Charles County Division of Environmental Services
Mr. Dan Wall, U. S. Environmental Protection Agency, Region VII
Weldon Spring Citizens Commission
Ms. Mimi Garstang, Geological Survey and Resource Assessment Division

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SEP 18 2002

The Honorable Jessie Hill Roberson
Assistant Secretary for Environmental Management
EM-1
U.S. Department of Energy
Washington, D.C. 20585

RE: ***Long Term Stewardship Plan for the Weldon Spring Site, St. Charles County, Missouri, Comments on Draft Plan issued August 9, 2002***
DOE Document Number GJO-2002-342-TAC GJO-LWEL 1.1-1

Dear Ms. Roberson:

Thank you for the opportunity to comment on the Department of Energy's (DOE) August 9, 2002, Long-Term Stewardship Plan for the Weldon Spring Site, in St. Charles County, Missouri. This is among the most significant issues remaining to be addressed at the Weldon Spring site, along with contaminated groundwater, and it is critical that we all work toward a final document that will provide for the level of care that corresponds to the long life of the radioactive waste and residue that remain. My staff has conducted a review of this document and, while we find this to be in a more readable format than previous documents, significant deficiencies remain. Our more detailed technical comments are enclosed.

At the outset, I want to thank you for conducting the recent workshops on Long-Term Stewardship. We applaud DOE's candid acknowledgement, made at the August 28, 2002, workshop, of significant shortcomings in the draft Long-Term Stewardship Plan. The information presented, and the chance for Missouri citizens to provide input, is particularly important since the disposal cell and residual contamination will remain in our community, essentially forever. Additionally, it is of vital importance that the plan is clear about who is responsible, what specifically will be done, how and when those actions will be taken, and who will have enforcement authority, if needed. A secure method of funding for those activities must also be determined.

In summary, we remain deeply concerned about the Weldon Spring Site, despite recently renewed progress. In national documents, DOE has characterized cleanup at the Weldon Spring site as complete, when significant issues regarding residual groundwater contamination remain unresolved. In fact, DOE has not addressed the contaminated groundwater on the site, and has

not yet provided a workable long-term stewardship plan. Therefore, we cannot agree with your characterization of the cleanup as "complete." As we approach the end of the federal fiscal year on September 30th, it is clear that much work needs to be done before the site cleanup can be considered "complete," as DOE has asserted for FY 2002, in documents presented to the U.S. Congress. We urge you to refrain from referring to the cleanup as "complete" and to correct those documents where DOE has declared final success prematurely. This is an action that you will need to take to DOE headquarters to ensure that Congress is not misinformed by a factually incorrect FY2004 budget request from the administration.

Progress should be made just as it has in the past at the Weldon Spring site – through honest work in the field, supported by rigorous technical and scientific analysis and conscious collaboration between involved parties. We do not intend to allow the federal government to walk away from its responsibility for perpetual stewardship of the site. This includes a variety of tasks necessary to protect human health and the environment, as well as the economic vitality and peace of mind of the community. We are gratified at the recent progress, but are acutely aware that much remains to be done. We are at a crucial crossroads in finalizing the cleanup and establishing an effective and sustainable long-term stewardship plan for the site, and look forward to working with you toward that goal.

The draft LTS Plan is an improvement over previous versions but remains inadequate in several areas. We agree that many of the department's previous comments have been addressed in this revision and the document has been redrafted in a more readable and usable format. However, significant areas need to be enhanced or strengthened to develop a robust plan for now and into the future and many issues and previous comments remain un-addressed. I am particularly thankful for Dave Geiser's commitment at the September 28, 2002, Stewardship Workshop, that the Department of Energy will take the time and effort to do "whatever it takes" to develop an all-encompassing Stewardship Plan for future care of this site. We fully support the commitment to completing an acceptable plan and the focused workshops proposed to help reach this goal.

Specific deficiencies noted in the current proposed plan include:

- The plan should include specific provisions to keep the public informed of future activities and a way to encourage public participation in significant future decisions.
- The plan identifies Long Term Monitoring and Maintenance and Institutional Controls as significant components of future protection for this site. Additional details have been provided compared to the last draft; however, more detail is needed in each of these areas. I anticipate a final plan, with supporting attachments, which can be used by regulators and other competent environmental professionals to evaluate and manage the site. This will include specific instructions on who, what, when, and how the multiple tasks involved will be accomplished. Baseline conditions, anticipated changes, and design tolerances must be clearly defined.
- The plan has components of a "primary" document, under the CERCLA process, but is not being developed from that strict approach. We are currently comfortable with this approach

and agree that a better final product will ensue as the final plan agreed to will ultimately be subject to the CERCLA review process.

- An enforceable agreement, which includes all parties, must be secured. We renew our request for the current Federal Facilities Agreement to be revised to include the state of Missouri as a legal party to the agreement.
- Complete cost estimates, including the cost of appropriate oversight, need to be documented and a process for developing a secure source of future funding (comparable to the Trust Fund in Tennessee), that is not limited by the uncertainties of annual federal appropriations, must be identified.

Enclosed with this letter are specific comments drafted by DNR staff indicating reactions to our initial reading of the plan. Additional comments will follow as we continue to evaluate this latest proposal. Evaluation of overall site and area issues and the direction taken to address residual groundwater contamination at the site will also be made.

Again, I want to thank you for the renewed progress in developing this important plan and process and look forward to DOE follow-through on the many commitments made at the August 28, 2002, Stewardship Workshop. I do want to assure you that we share your commitment to do "whatever it takes", for as long as it takes, to reach that goal.

If you have any questions or comments on the enclosed information please contact me at (573) 751-4732.

With kind regards,

DEPARTMENT OF NATURAL RESOURCES

Stephen Mahfood
Director

Enclosure

c: Ms. Pamela Thompson, U. S. Department of Energy
Mr. Dave Geiser, Office of Long-Term Stewardship, U.S. Department of Energy
Mr. Mike Duvall, St. Charles County Division of Environmental Services
Mr. Dan Wall, U. S. Environmental Protection Agency, Region VII
Weldon Spring Citizens Commission
Ms. Mimi Garstang, Geological Survey and Resource Assessment Division

Comments on the U.S. Department of Energy
Long-Term Stewardship Plan for the Weldon Spring, Missouri, Site
September 10, 2002

General Comments

L-8 | 1. While we appreciate the use of the internet to provide copies of this key document, it should not be the only means of distribution. Because of the quality of print and lack of color, key aspects of the plan (e.g. maps and tables) are hard to identify and use as intended. Hard copies should be provided to many stakeholders initially and summarily to anyone that requests one.

Response L-8: DOE indicated in the announcement of release of the draft LTS Plan that hard copies were available by calling the Weldon Spring site office. DOE also will improve the presentation quality of plans posted on the Internet.

L-9 | 2. The inclusion of detailed maps and drawings including color in appropriate figures represents a significant improvement and has been a great help in understanding the information presented. Please continue and enhance this practice where possible.

Response L-9: Comment noted.

L-10 | 3. An executive summary of the LTS plan, including a definition of "Stewardship" would be helpful.

Response L-10: DOE will include a glossary of key terms in the LTS Plan (see Response A-17). DOE will add more summary information to Section 1.1, "Purpose and Scope" regarding the activities included in site stewardship.

L-11 | 4. Throughout the document DOE indicates what actions they took to remediate various portions of the site, however, they fail to specifically show where residual contamination is located. The fact that contamination remains in the waste disposal cell, as well as many other areas, at levels that would restrict future uses, are the reason that Stewardship actions are warranted. DOE should clearly define the nature and extent of contamination remaining and provide an explanation of why leaving it is acceptable.

Response L-11: Residual contamination which require institutional controls to restrict use are shown in the LTS Plan. Additional text will be added to discuss the risk based decision process for institutional controls. See also Response A-18.

L-12 5. The level of detail is deficient. Specific information on baseline conditions, design criteria, allowable tolerances, and how conformance to these specifics will be maintained, must be included. The level of detail should be sufficient to allow regulators and other competent environmental professionals to evaluate and manage the site. This will include specific instructions for who, what, when, and how the multiple tasks involved will be accomplished. Instructions should also be provided on the method and level of detail to be included in of records documenting site activities.

Response L-12: DOE will provide additional detail in the LTS Plan, as noted in the plan (e.g., for institutional controls and Chemical Plant groundwater monitoring). Pertinent design and performance criteria are provided in Table 3-6 and Appendix D. Please try to be specific on details that are missing to assure our focus is productive in accommodating your specific areas of concern. See also Response L-65.

L-13 6. A detailed cost estimate for all components of stewardship operation, including overall project management; monitoring; maintenance, inspections, regulatory oversight, and public information/participation should be provided in this document.

Response L-13: DOE will include summary budget estimates in the next revision of the LTS Plan.

L-14 7. There is reference to EPA and the Federal Facility Agreement as the enforceable instrument for completion and documentation of stewardship work at the WSSRAP. An enforceable agreement that includes all parties must be secured and DOE should follow through on its previous commitment to revise the current Federal Facilities Agreement to include the state of Missouri as a legal party to the agreement.

Response L-14: See response to L-6

L-15 8. There is no provision or commitment to continued evaluation of evolving Science and Technology that may be applicable to enhancing protectiveness of the site.

Response L-15: Decisions to replace an on-going LTS activity with an improved technology at a particular site will be based on a positive return-on-investment; i.e., the difference between the actual costs of LTS activities and the estimated life-cycle savings provided by the new technology. As new technologies are proven to be cost-effective replacements for existing technologies, they will be considered during the periodic assessments of the remedy efficacy, as supported by environmental monitoring data. DOE periodically reviews existing remedies for cost effectiveness. As new technology becomes available that would result in a net reduction to the cost of the remedy without a change in effectiveness, we would use the new technology. The primary objective is that the remedies remain protective.

L-16 9. The document has several references indicating that the TCE remediation will be completed in 2002. However, current schedules and communication with WSSRAP on-site personnel indicate that the TCE remediation may not be implemented at this time. Which is the actual condition. We reiterate our position that this treatment process should proceed without further delay.

Response L-16: Refer to Pam Thompson's letter to Mimi Garstang dated September 12, 2002. We are hopeful that DOE, EPA and MDNR can find a mutual path forward on the groundwater operable unit (GWOU). The stewardship plan will eventually reflect whatever decision is made for the GWOU.

L-17 10. The document references on-site presence in several locations, which the department considers appropriate. However, discussions with WSSRAP staff and newspaper articles indicate that after 2004, DOE will no longer be present at the site. Which is correct?

Response L-17: DOE expects to maintain a federal and contractor presence at the site through FY04. DOE will fund and maintain a periodic presence after that time, likely through a contractor workforce.

L-18 11. Discussion of future "5-year" reviews references the current EPA guidance, which is appropriate. However, the document states that the last Five-year review was performed in 2001. This review was evaluated by department staff, using the then current EPA guidance, and found it to be seriously deficient. A comment letter was drafted and sent to DOE, noting our observations. DOE has not yet responded to that letter. A "periodic review" should be completed as soon as possible, which is consistent with the current EPA guidance. This approach would also be consistent with the CERCLA guidance that calls for "periodic reviews" at a frequency of no more than once every five years.

Response L-18: DOE will respond under separate cover to MDNR comments on the 2001 Five Year Review. In essence, the DOE disagrees with MDNR that the Five-year Review was deficient in any manner and considers the document complete. DOE has EPA's concurrence on the document. The next Five Year Review will be in 2006. See also Response L-130.

L-19 12. The plan states that DOE will perform scheduled annual inspections and nonscheduled site inspections. The department should be given the opportunity, and provided with sufficient funding, to participate in and provide comments on these inspections.

Response L-19: The stewardship plan will be revised to clarify that certain organizations, including the MDNR, will receive advance notice of DOE's annual inspection. This will provide an opportunity for MDNR to participate. At the present time, DOE does intend to fund MDNR for the time it takes to complete annual reviews and the Five-Year Reviews.

L-20 13. Several stewardship provisions are listed as "DOE may do…" This wording should be changed to "DOE will do".

Response L-20: DOE will review the use of "may" versus "will" and will revise the LTS Plan where appropriate. DOE will not change all uses of the term "may" to "will."

L-21 14. Several references are made to activities at the "mill". It is obvious that this document was modeled after a Uranium Mill Tailings site rather than the different and, in some ways, more complex WSSRAP site. References to "mill" are not applicable and should be corrected. Also, uranium Mill Tailings sites are traditionally located in remote arid environments which contrast significantly with the humid, urban settings where the WSSRAP site is located.

Response L-21: DOE will remove reference to a mill from the LTS Plan. The August 9, 2002, LTS Plan follows the general outline of all LTS Plans prepared by the Grand Junction Office (e.g., Section 1 defines scope, basis, and requirements; Section 2 defines the site end state at the beginning of stewardship, and Section 3 defines required stewardship activities). Stewardship requirements for the Weldon Spring site are driven by ARARs, selected remedies, and site risks, as indicated in the LTS Plan. See also Response B-10.

L-22 15. The Chemical Plant property has confirmation units released to sub-surface criteria that contain levels of residual contamination higher than those allowable for surface release. DOE needs to ensure that erosion and mixing effects do not uncover subsurface contamination at levels that would be inappropriate for surface exposure. Any future land use contemplated should contain appropriate institutional controls to restrict any excavation in the area. To confirm continued safety at the site the department recommends that DOE conduct a MARSSIM Class 3 evaluation of areas containing residual contamination as part of the CERCLA "periodic review." A Class 3 area is defined by MARSSIM (Page 2-5 in Chapter 2) as: "Any impacted areas that are not expected to contain any residual radioactivity, or are expected to contain levels of residual radioactivity at a small fraction of the DCGL, based on site operating history and previous radiation surveys". This is applicable as the Chemical Plant area was remediated and contains residual radioactivity at a small fraction of the site criteria.

Response L-22: DOE does not see the value in performing MARSSIM Class 3 surveys on confirmed areas. MARSSIM is intended for use during confirmation of remediated areas. The site has already undergone a thorough confirmation process to ensure all areas meet the ROD cleanup criteria. In addition, final walkover surveys were performed on all confirmed soil areas within the site perimeter to determine whether areas of elevated gamma activity existed; none were found.

Rather than performing additional radiological surveys, the requirement of checking erosion in areas released using subsurface criteria can best be met by visually observing

these areas and repairing significant erosion damage as necessary. Also, land use restrictions will prohibit excavation in areas released using subsurface criteria.

L-23 | 16. The Southeast Drainage is a dynamic losing stream that contains un-remediated soils. The DOE needs to ensure that erosion and redeposition do not leave residual contamination in inappropriate places. To accomplish this, the department recommends that DOE consider annual sampling of sediment from beneath the Katy Trail Bridge and sediment from the North end of the Highway 94 culvert.

Response L-23: The DOE does not believe that sampling is needed for soils or sediment beneath the Katy Trail Bridge and at the North end of the Highway 94 culvert as suggested by the commentor. The soils and sediment within the drainage have been evaluated and determined to be protective of the recreational visitor scenario as presented in the Engineering Evaluation/Cost Analysis (EE/CA) report, dated August 1996. If concentrations similar to those identified at the drainage were to be found at the locations mentioned above, these levels would be similarly protective based on the current land use at these locations. That is, potential exposure parameters assumed for the recreational visitor at the Southeast Drainage amply address any potential exposure at the other locations mentioned above. Appropriate institutional controls will be implemented and verified as identified in the LTS Plan.

L-24 | 17. Burgermeister Spring, as a significant discharge point for the Chemical Plant area, should be evaluated for redeposition of radioactive materials. The department recommends that the DOE consider annual sampling of the sediments accumulated between the point of emergence and the downstream weir.

Response L-24: The nature and extent of radiological and chemical contamination in the 6300 drainage was evaluated using samples collected during 1987 and 1988. Four samples were collected in the drainage, including one collected from Burgermeister Spring. Individual sampling locations were chosen primarily to represent areas of high sediment deposition. The uranium results from the Spring ranged from 1.4 pCi/l to 2.6 pCi/l (DOE Report DOE/OR/21548-060). Since the concentrations of uranium in groundwater have decreased substantially due to source removal, the likelihood of significant redeposition of uranium in these sediments is low. DOE does not support additional sampling at this time.

L-25 | 18. As the plan is refined, but before it is finalized, it seems appropriate to conduct a dry run of those aspects that can be accomplished such as inspections, equipment checks, typical Institutional Controls verification, etc. We request that DOE factor this into development of the plan.

Response L-25: Many of the activities described in the LTS Plan are actually current on-going activities. As suggested, DOE will begin some of the new activities prior to the LTS Plan becoming finalized.

L-26 | 19. Add a Definitions page for words used throughout the document that may have a specific meaning to DOE. For example: Stewardship, Operable Unit, Stakeholders, etc.

Response L-26: See Response L-10.

L-27 | 20. In the appropriate section, add information on who will staff the Interpretive Center. If not staffed, how will vandalism at the site be prevented? If staffed, by whom and what hours?

Response L-27: DOE will clarify in the LTS Plan that the Interpretive Center will be staffed when it is open. The hours and days of the week that the Interpretive Center will be open remains to be determined, based primarily on feedback from the public and actual use. The LTS Plan will indicate the hours of operation of the Interpretive Center will be posted at the site and on the web site. DOE will fund the salary of the part time employee(s) needed to staff the Interpretive Center.

L-28 | 21. The department is in the process of evaluating information provided in DOE's August 21, 2002, letter to Director Stephen Mahfood. Additional comments may be indicated, subject to this review.

Response L-28: Comment noted.

Specific Comments

Section 1.1

L-29 | 1. Paragraph 2. Why only "consultation" for the state of Missouri and "concurrence" from U.S. EPA? RCRA sites require concurrence from EPA and the department. Without concurrence, the substantive requirements of RCRA as an ARAR will not be met. The department requests that the document be in effect upon concurrence of EPA and the state.

Response L-29: EPA as the final decision maker under the existing Federal Facility Agreement and for any future agreement, will provide concurrence with elements of the LTS Plan that derive from CERCLA deliverable documents. The description of MDNR's role will be revised to reflect its anticipated signatory status under the planned post-closure agreement.

L-30 | 2. Paragraph 2. What does the statement "DOE…will provide stewardship services" mean? It is our understanding that other entities (Saint Charles County, for instance) have been identified to provide at least some of the activities the department considers to be "stewardship services"

Response L-30: Agree. DOE will add text to direct the reader to Section 3, which DOE will revise as indicated in Response B-2. However, this LTS Plan constitutes a commitment made by DOE and does not establish commitments for any other entity.

Section 1.2

L-31 1. General. RCRA post-closure disposal cell monitoring and maintenance requirements are ARARs." RCRA has been identified as an ARAR for the disposal cell and department post-closure oversight is a RCRA requirement.

Response L-31: DOE agrees that RCRA post closure disposal cell monitoring and maintenance requirements are an ARAR and this is stated clearly in the plan.

L-32 2. Paragraph 1. Our understanding from reading this paragraph is that DOE is the legal owner of all waste generated at the site, including residual soil and groundwater contaminants, materials in the disposal cell, and those materials disposed of off-site. Is this a correct interpretation?

Response L-32: DOE is the legal owner of all waste generated at the site during the operation of the Chemical Plant and during DOE approved remedial action. Previously generated Army waste, collocated with AEC/DOE waste, is managed by DOE in accordance with the DOE/Army Memorandum of Understanding. There have been occasions when a subcontractor generated waste, such as waste motor oil, which was the responsibility of the subcontractor. In these instances, DOE's Project Management Contractor (PMC) established and enforced procedures to assure that cross-contamination did not occur. DOE does not agree with MDNR's inclusion of residual soil in the category of a waste.

L-33 3. Paragraph 2. Is there some distinction between the terms "contaminated" or "stored" as used in this paragraph?

Response L-33: "Contaminated" has a different meaning than "stored." See also response H-14 for a clarification regarding use of the term "disposal" versus "stored."

L-34 4. Paragraph 3. DOE should clarify that there are four operable units, three of which have a Record of Decision and one that has an Interim Record of Decision. Also, Remedial Actions have been conducted on the three RODs and are nearly complete. Final Remedial Action reports exist for the Quarry and Quarry Residual and remain to be finalized for the Chemical Plant cell construction under the ROD.

Response L-34: DOE does state in this paragraph that there are four operable units. This description is adequate for this section of the LTS Plan. Section 2.2.2 provides the detail suggested in this comment. The Remedial Action Report has not been completed for the Quarry Residual Operable Unit.

L-35 5. Paragraph 5. (Top of Page 1-3). DOE references guidance for UMTRCA sitespecific LTS plans for long term custody and care for a typical remediated uranium processing site and disposal facility. We believe the Weldon Spring setting is significantly different from a typical uranium mill tailings facility. There are numerous other documents addressing long term stewardship, some from a broader perspective than the referenced document. The department urges DOE to give further consideration to other guidance documents, which may be more applicable to the WSSRAP.

Response L-35: See Response B-10.

Section 2.1.1

L-36 1. Paragraph 2. The various vicinity properties and groundwater contaminated by historic operation are a part of the site, as defined by the FFA, and should be included in this and subsequent descriptions.

Response L-36: DOE agrees to add this to the site description, however, vicinity properties that were remediated in accordance with the Record of Decision for the Chemical Plant Operable Unit do not require long-term stewardship activities, and therefore, they are not detailed within the LTS Plan. Refer to Sections 2.3 and 2.4 of the LTS Plan for discussions and figures pertaining to groundwater at the Weldon Spring Site.

L-37 2. Paragraph 3, last sentence should include the St. Charles well field and treatment plant(s) as two of the smaller portions of land that the Army transferred ownership to.

Response L-37: See response to L-41.

L-38 3. Paragraph 4. The quarry also borders Missouri Route 94, the St. Charles County shooting range, and the Missouri Department of Natural Resources Katy Trail State Park.

Response L-38: Disagree. The Weldon Spring quarry is defined by the boundary of the 9-acre parcel which is owned by the U.S. Department of Energy. Missouri Department of Conservation property borders this boundary.

L-39 4. Paragraph 6. Private residences are located just west of the Quarry and north of the Chemical Plant. This paragraph should include this fact.

Response L-39: Disagree. There are no privately owned residences within close proximity of the Weldon Spring Site. Both the Quarry and Chemical Plant areas are surrounded by either State or Federally owned land. However, the DOE acknowledges that one conservation-owned house exists directly north of the Chemical Plant. Please provide any other information you may have on this issue to assist in modifying the language appropriately.

L-40 5. The highway adjacent to the Chemical Plant and quarry is incorrectly identified. The correct name is Missouri State Route 94. The text should be revised.

Response L-40: DOE will revise the text as requested.

L-41 6. In addition to the Francis Howell School District, the Missouri Department of Transportation, the Community of Weldon Spring Heights, and the University of Missouri, the well field and water plant was transferred to St. Charles County. St. Charles County should be added to the list of property owners.

Response L-41: Text will be added to indicate that the water treatment plant was transferred to St. Charles County. The well field land is owned by the Missouri Department of Conservation.

Section 2.1.2

L-42 1. Paragraph 3. DOE states that the Chemical Plant area watersheds are not sources of irrigation or public drinking water supply. What is the basis for determining that the water from these watersheds is not used for irrigation? What about water supplies taken from the Missouri and Mississippi Rivers? It seems remiss for DOE to absolve the Chemical Plant from any relationship to possible water use yet fail to mention that the Quarry watershed has the potential to impact the St. Charles County well field.

Response L-42: Surface water from the Dardenne Creek watershed, located north of the chemical plant is used as a source of water for irrigation. The Southeast Drainage water shed contains insufficient water to supply water for irrigation or drinking water. This paragraph discusses the impacts from the Chemical Plant, not the quarry, which is contained in the next paragraph. There was no historical surface water drainage from the quarry proper, therefore there was no potential to impact the well field from surface water runoff. Current run off is clean due to the placement of clean backfill. DOE does recognize the potential for impacted groundwater originating from the quarry to impact the well field. The third paragraph will be revised to indicate the use of Dardenne Creek for irrigation purposes.

L-43 2. Paragraph 4. Good elevation data for the quarry, an average elevation for the Missouri River or an approximate vertical elevation change between the site and the river would be helpful. Also, it should state in this section that contaminated groundwater from the quarry has the potential to impact the St. Charles County well field and Femme Osage Slough.

Response L-43: The average water elevation in the Missouri River near the St. Charles County well field is 450 ft. MSL. This information will be included in the text. Discussion of groundwater interaction is not pertinent to the surface water discussion presented in this section.

Section 2.2.1

L-44 | 1. Paragraph 2. States that the facility was decontaminated prior to transfer to the AEC in 1955. This implies a level of effort that we are sure was not envisioned at that time. Please be more specific regarding what is meant by the term "decontamination" in this context. Also, this paragraph should include a reference to recycled uranium materials, which were also processed at the Chemical Plant.

Response L-44: This paragraph will be revised. The reference to recycled uranium will not be included, as it was not a major, if any, part of the uranium processing at the chemical plant. See also the Responses A-7 and A-50.

L-45 | 2. Paragraph 4. Should include a referenced to recycled uranium materials.

Response L-45: See Response L-44.

L-46 | 3. Paragraph 5. What care does "caretaker status" imply? Were any environmental studies completed in this period?

Response L-46: "Caretaker status" will be elaborated upon.

L-47 | 4. Text needs to be added to the discussion of the Weldon Spring Ordnance Works concerning waste stream disposal practices similar to that included for the Weldon Spring Chemical Plant.

Response L-47: This section of the LTS Plan will be revised to provide additional brief descriptions of site activities, including disposal actions on site during the time the Army had operational control.

Section 2.2.2.2

L-48 | 1. First Paragraph. " the remedy included remediation…and temporarily stored material in an on-site engineered disposal facility". What is being referred to as "temporarily stored"? The waste in the cell?

Response L-48: "temporarily stored" is referring to material that was temporarily stored on the site during remediation and then placed in to the disposal cell.

L-49 | 2. Paragraph 2. "Approximately 1.48 million cubic yards…of source materials" is stated in context with building debris, asbestos, etc. Does the cell contain source material or waste?

Response L-49: "Waste" is the better description in this context and the text will be revised

Section 2.2.2.3

L-50 1. Paragraph 1. Should explain how the raffinate pits were allowed to overflow into the southeast drainage during the "caretaker status" and prior operation.

Response L-50: The background information and the term "caretaker status" will be expanded upon.

L-51 2. Paragraph 2. States "This removal is expected to control the source of spring water contamination." The department considers this a misleading statement as the SED contains source areas that were not remediated and the springs remain contaminated. It is our understanding that the removal actions taken in the Southeast Drainage were designed to reduce the potential exposure to recreational visitors or hypothetical children. What technical information has DOE relied on to determine that there are no other possible sources of the noted spring contamination?

Response L-51: The Southeast Drainage is located on the south side of the groundwater divide. Review of Figures 2-9 through 2-13 indicates that groundwater contamination does not extend from the chemical plant site into the southeast drainage. The drainage was contaminated by discharges from the chemical plant and former ordnance works. Removal of any of these soils would reduce the source material to the springs, which are contaminated by surface water flow through contaminated sediments in the surface drainage and through residual contamination in the cracks and fissures in the subsurface. The text will be revised to state that this removal is expected to reduce the source of spring water contamination.

L-52 3. How could the hunter and resident child scenarios gauge whether the decision is protective of the environment? The assertion in the first sentence, that ecological risk was gauged, is certainly not supported in this section. Also, what are the criteria for the "hunter" or "hypothetical resident child" scenarios? The specific scenarios should be stated in the plan.

Response L-52: The EE/CA report prepared to support the removal action at the Southeast Drainage discusses the ecological risk assessment addressing terrestrial and aquatic biota living in the drainage and/or drinking surface water present in the drainage. Appropriate text or references will be added to the revised LTSP to clarify the discussion.

Section 2.2.2.4

L-53 1. Paragraph 1. This is a misstatement of the facts. Regulator and public response to the GWOU Proposed Plan was for further study of the feasibility of a pump-and-treat remedy for all contaminants other than TCE. The Interim Record of Decision was designed to implement, not simply study, in situ treatment of TCE contamination. Please correct.

Response L-53: MDNR insisted that the pump and treat study be conducted in the area of TCE contamination, which was the most optimal location to assess the effectiveness of various pump and treat options. We agree that the Interim ROD for groundwater did establish that a specific effort would be undertaken to remediate TCE via In-Situ Chemical Oxidation. The text in the LTS Plan accurately summarizes these aspects of the Ground Water Operable Unit.

L-54 2. Paragraph 2. Is in conflict implying that TCE remediation was completed in 2002, and later that "DOE will address results and identify the final remedy for cleanup of TCE and other contaminants in the final Ground Water OU Record of Decision (pending)." We adamantly disagree with this approach. No sufficient justification has been provided to delay implementation of the Interim Record of Decision. The results of the pilot studies were a success. DOE should implement the remedy selected for TCE contamination now.

Response L-54: See Response L-16

Section 2.2.2.5

L-55 1. The document references remedial actions taken at the Quarry, however, it fails to identify the nature and extent of the residual contamination; the reason Stewardship is needed for this area.

Response L-55: Section 2.2.2 is titled "Remedial Action History." Residual contamination is addressed in Section 2.3 "Final Site Conditions" and section 2.4 "Ground Water Conditions."

Section 2.2.2.6

L-56 1. DOE indicates they verified their models, etc. In order to understand anything about what this means, you would have to review the data & their reports. They should admit they studied the area in response to a request from the state to consider various options to cleanup the groundwater including construction of a collection trench across the area of greatest contamination. After operating the trench for two years, they demonstrated that - while the trench was effective in removing some contamination; it was not considered sufficient to warrant full scale or permanent cleanup of the groundwater contamination. As a result, no cleanup is planned and the uranium groundwater plume will be monitored to confirm it remains a low threat to further groundwater contamination.

Response L-56: The LTS Plan will be revised to expand upon the summary of the trench study.

L-57 | 2. The description does not address contamination remaining under highway 94 or on the northeast slope. This area should be considered for Institutional Controls in a similar manner to the culvert under highway D. If MoDOT ever does anything to update Hwy 94 in this area, there are potentially contaminated soils that workers need to be made aware of.

Response L-57: The extensive Quarry characterization does not support MDNR's position of any contamination underneath Highway 94. Also see response to comment A-68.

Section 2.3.1

L-58 | 1. General: In several instances in this chapter DOE indicates that the potential residual radioactivity is insignificant; it may be appropriate to say very low. Both terms are somewhat vague.

Response L-58: DOE will change "insignificant" to "very low," as suggested.

L-59 | 2. Does a waste water plant still remain on site?

Response L-59: A sanitary wastewater treatment package plant will remain on site to support the occupation of the Administration Building and the Interpretive Center.

The major equipment components of what was going to be the leachate treatment system (Train 3) are being stored in the Train 3 Building. As a contingency, these components could be assembled and operated to treat the leachate. DOE will maintain its NPDES permit, specifically outfall 007.

L-60 | 3. Paragraph 1. What are the referenced cleanup criteria?

Response L-60: The referenced cleanup criteria are taken from the Chemical Plant Record of Decision as stated in the text. Reference to Tables 9-3 and 9-4 of the ROD will be made for clarification in the LTS Plan text. See also Response A-79.

L-61 | 4. Paragraph 2. The department does not agree that federal government ownership is a sufficient level of institutional control. The deed to the property should contain appropriate restrictions, as should all properties impacted by residual contamination

Response L-61: DOE will clarify this section of the LTS Plan to indicate that Institutional Controls will include restrictions placed upon the deeds to the properties, including property currently in federal ownership.

L-62 | 5. Paragraph 3. States "DOE will pursue an agreement…". "Pursue" should be replaced with "take action to implement." Also, while Burgermeister Spring is addressed, there is no mention of contaminated springs in the 5300 drainage. Please correct this oversight.

Response L-62: DOE will change "pursue" to "obtain." DOE will revise the text to clarify that springs in the Southeast Drainage (a.k.a. the 5300 drainage) will be encompassed in the institutional control for the Southeast Drainage.

L-63 | 6. Paragraph 4. What is the "approved hypothetical child scenario" and who approved it?

Response L-63: The intent of this discussion was to state that a hypothetical child resident scenario was evaluated in the EE/CA report. This hypothetical child scenario was considered to represent the reasonably maximally exposed individual at the drainage, consistent with EPA's risk assessment guidance. DOE consulted with the EPA, MDNR, and the Missouri Department of Health in developing this scenario and its exposure assumptions for evaluating potential exposure to the contaminants at the drainage. This section of the LTSP will be revised, as appropriate, to clarify the discussion.

L-64 | 7. Paragraph 6. States "…DOE will attempt to remove …" should read "DOE will remove." Also, the paragraph discusses DOE's guideline of 100 millirem per year. EPA guidance specifies dose exceeding 15 millirem as not appropriate for "free release". Please correct this oversight.

Response L-64: This is not an oversight as the culverts were not "free released". Also, the maximum potential doses to the public and to workers are 0 mrem and less than 10 mrem respectively. Therefore, both DOE and EPA dose limits are satisfied. The final sentence will be revised to better state DOE's obligation to provide for proper disposal.

Section 2.3.2

L-65 | 1. General. Design criteria, tolerances, and anticipated changes should be specified for all disposal cell features. For instance, what is the expected settlement and where? What is the purpose of the various components of the LCRS (including sump components)? What is the projected leachate generation rate over time (our understanding is that it will decline)? What degree of rock degradation is allowable for various areas of the cell (differing slopes for instance)? How will the various leachate monitoring and alarm systems be calibrated or checked and how will discrete samples be obtained from each component? Also, a more complete description of the function of each cell component should be included. For all components, a specific description of indications of potential problems should be provided.

Response L-65:

1.1. **Design Criteria** were summarized under *"Design Criteria for WP437 Disposal Cell Construction"*, and were issued prior to start of the Title II Design. This document is 69 pages long and lists all the relevant functional, performance and technical criteria that were necessary for the design of the disposal cell, waste removal and placement, site final grade and other

miscellaneous activities. Calculations, Construction Specifications and Drawings, Operational Plans and Quality Control requirements were further developed based on these criteria. Ultimately, all these requirements resulted in construction activities documented by Quality Control and Engineering reports. Since the disposal cell as it stands today is a consequence of all these design and construction stages, the comprehensive listing requested by the commentator is inappropriate for a Stewardship Document. However, a reduced set of environmental criteria used in the design of the cell may be justified and more relevant for the purpose of this document (for example PMP, MCE, design life, hydraulic conductivity of clay liners).

1.2. **Tolerances** were specified for major construction activities in order to guarantee the conformance of the field execution to the intent of the specifications. In several instances monitoring criteria are set well below such "tolerances". Illustrative in this respect is the performance of the secondary leachate collection system where the Action Leakage Rate was set much lower than the calculated maximum discharge capacity of this system.

1.3. **Anticipated Changes (example: expected settlement and its location).** Several of the cell features were calculated and designed to sustain the largest possible environmental stresses (erosion, seismic displacements, slope stability). In absence of such stresses, major changes are not anticipated to occur. Minor changes (example some rock degradation) are rather inherent to the aging process of any structure and will have no detrimental impact. Other cell features were designed to sustain changes estimated in a very conservative manner. Settlement is one of these. However, a worst-case estimate for design purposes can not be construed into "expected" or "anticipated". For the sake of numerical quantification, such upper limits will be listed in the LTS Plan.

1.4. Based solely on design projections, the leachate flow is expected to essentially stop within 30-years. The cell system is characterized by local and general hydraulic anisotropy, thus the flow regime may suffer time variations that cannot be accurately captured by calculations. The design estimated limits are a good approximation or envelope for these variations.

1.5. See Table 3-6 regarding rock degradation.

1.6. All instrumentation will be maintained (e.g., calibrated and checked) in accordance with the manufacturers recommended maintenance. Detailed protocols for operating and calibrating the LCRS instrumentation will be included in a separate manual.

1.7. Discrete sampling of the leachate was conducted for several years during the waste placement activities at the Weldon Spring Site. Currently, composite sampling of the disposal facility leachate is conducted each time leachate is hauled to MSD. The necessity to conduct some discrete sampling of the disposal cell east/west primary/secondary collection systems is presently being evaluated. The system, as constructed, permits such discrete sampling, if needed.

1.8. The description of cell components will be expanded. Potential problems are summarized in Table 3-6.

L-66 2. Paragraph 1. The amount of radioactivity listed as stored in the cell is in error. Please correct. The disposal cell is referenced as covering 45 acres and being 91 feet in height. Is this accurate? It would be helpful if the plan identifies the actual area of the base of the disposal cell, the horizontal plane covered by waste materials, and the total area covered by the waste area plus sideslopes. (Also should include subgrade description of pad and clay barriers.)

Response L-66: See responses to comments A-7 and A-93 regarding cell activity. The outer perimetral protection system encompasses an area of approximately 41 acres. The cell maximum height is 91 feet, as measured between the toe apron elevation near the east discharge outlet and the highest point of the cover. The waste column has a maximum thickness of 63 feet measured between the highest waste elevation and the LCRS elevation along the same vertical. The waste footprint is approximately 24 acres, lower interior 3H: 1V dike slopes included. The Plan will incorporate these values. A brief description of the subgrade will be added

L-67 3. Paragraph 2. Is it possible to monitor the quantity and quality of leachate for each pipe in the primary and secondary collection system? Is this being done? If not, why not?

Response L-67: The LCRS Sump instrumentation monitors independently the leachate volume (flow) generated by the secondary LCRS corresponding to each of the two cell bays. This operation is automated. The construction of the sump enables collection of leachates independently from each secondary pipe. Independent monitoring of the leachate volumes or characteristics corresponding to each primary LCRS pipe was not identified as a design or performance requirement. Should a need to independently assess the chemical characteristics of the leachate generated by each primary or secondary pipe ever develop, a program for collection of separate samples could be implemented. The leachate moves through the waste mass in a non-homogeneous flow regime. Ideal conditions of quasi-vertical flow lines, which would lead to the leachate obtained from each floor bay being assigned to the overlying waste columns, do not reflect the actual flow regime. The spatial distribution of the geotechnical parameters regulating the flow (gradients, moisture contents, and hydraulic conductivities) is characterized by anisotropy. In such conditions, testing of the primary or secondary leachate independently for each bay (pipe) would be inconclusive. Should leakage from a certain pipe (primary or secondary) be suspected, an independent analysis may be performed.

L-68 4. Paragraph 3. What potential problems could arise from the degradation of radon in the disposal cell? We are aware of possible issues at the Fernald, Ohio, site that may have a bearing on the performance/impact of the WSSRAP radon barrier. Has the Fernald issue been given appropriate consideration?

Response L-68: In speaking with Fernald personnel, we found that they know of no issue with their disposal cell radon barrier. If you have more specific information, please let us know so we may research this further.

L-69 | 5. Paragraph 4. Why are V shaped swales used versus the more common U shaped to minimize erosion?

Response L-69: We assume the comment refers to the transversal shape of the leachate bays. It should be noted that the perceived "V-swale" is 400-feet wide and the angle between the two lateral sides is 177.7 degrees. A "U" geometry in these conditions, while mathematically possible, would be impossible to construct. In addition, in longitudinal direction perforated pipes carry the leachate. Heavy synthetic materials underlie the "swale" and the interstitial velocity does not exceed 0.002 fps. Erosion in such a condition is a physical impossibility.

L-70 | 6. Paragraph 5. The sequence of the liner components is not clear from this description and it does not seem to match figure 2-7. Also, there should be some note of the siting requirement for the equivalent of 30 feet of 10^{-7} clay under the engineered cell.

Response L-70: Agree. The description will be corrected. A reference to the siting criteria quoted will be added.

L-71 | 7. Paragraph 6. A recent disposal cell inspection noted several feet of water in the secondary sump around the leachate sump. Site personnel reported that the flow in the drain gravel in this annulus was so slow that this component could not be dewatered because the "pea gravel" in the annulus was not permeable enough to allow water to flow to the pipe in any practical time. That is, the monitor well in the secondary sump becomes dewatered after a relatively short period of low-volume pumping, but recovers to the original level in the next day or so. Considering this, how will this secondary sump meet its intended function?

Response L-71: The HDPE "pouch" surrounding the leachate sump may collect leachate only in the events of overflow upstream of the penetrations (designed so as to meet the regulatory requirement of not more than one foot of head) or breakage (leakage) of pipes. Its storage volume is little impacted by a residual volume of water, estimated to be approximately 4800 gallons. This residual volume will be further reduced by additional pumping. The ultimate purpose of the drain gravel surrounding the LCRS HDPE piping and sump is to provide a flow path for leachate from the cell that is higher in permeability than the surrounding low permeability clays, if the HDPE system would clog or otherwise fail in the distant future.

L-72 | 8. Paragraph 8. Will someone be present near the leachate sump to hear the audible alarms? Can they be responded to from a location that will be monitored in some other way?

Response L-72: The LCRS will not be staffed 24 hours a day, seven days a week. In fact, with current leachate generation rates, infrequent rounds will be adequate to assess the maintenance of the system. The LCRS will have a remote notification system capable of notifying personnel responsible for the operation of the LCRS. Alarms for a high leachate level and a high methane concentration in the sump will trigger notification of local contractor response personnel. Activating this remote notification capability represents a change in DOE's position, but seems prudent to implement now rather than later.

Section 2.3.3

L-73 1. Identify what levels of contamination remain or are estimated to remain in the soils and groundwater for the Quarry area.

Response L-73: Soils in the quarry proper were remediated in accordance with the Quarry Bulk Waste Operable Unit and Quarry Residuals Operable Unit Records of Decision and are protective under a recreational use scenario. Institutional controls will be put in place for the quarry proper which will ensure recreational use in perpetuity. Groundwater contamination at the quarry area is depicted in table 2-8 and figure 2-15.

L-74 2. See comments on Section 2.2.2.6 regarding contamination under Highway 94 and the northeast slope.

Response L-74: See response to comment L-57.

Section 2.4.1.1

L-75 1. General: DOE indicates nitrate persists in groundwater and is likely to enter the conduit system and subsequently discharge to springs. The department has requested that DOE, at a minimum, consider passive treatment of nitrates at the seeps and springs. What efforts have been taken by DOE to address this contamination. Failure to fully address contamination is unacceptable and will be recommended for referral of assessment of Natural Resource Damages.

Response L-75: DOE conducted a risk assessment for the GWOU and presented it in the Baseline Risk Assessment (July 1997). Recreational use of the land and occasional consumption of the spring water is within EPA's acceptable risk range. These calculated risks would be even lower based upon current water quality data. The LTS Plan will be revised as needed to reflect a final decision on the GWOU.

L-76 2. Paragraph 1. States "Contamination in ground water is generally confined to the shallow, weathered portion of the Burlington-Keokuk Limestone, which discharges to springs in the former Ordnance Works area." If it is "generally confined" where is the rest of the contamination? Vertical extent of contamination must be addressed. What exactly does the DOE consider the former Ordnance Works area in this context?

Response L-76: The text will be revised to state that the contaminated in groundwater is generally confined to the shallow, weathered portion of the Burlington-Keokuk Limestone, which discharge to springs in the Busch Conservation Area. Some contamination occurs in the unweathered portion of the Burlington-Keokuk Limestone beneath the former raffinate pit sites.

L-77 | 3. Paragraph 2. What efforts have been taken to evaluate and research natural denitrification or enhanced denitrification. Recent guidance developed by the ITRC indicates the likelihood of in situ biodenitrification for many sites.

Response L-77: The evaluation of remedial options for groundwater are outside the scope of this plan. DOE will address the final remedy for cleanup to TCE, nitrate, nitroaromatic compounds, and uranium under the CERCLA process, which includes regulatory and public participation after presentation of the proposed plan.

L-78 | 4. Paragraph 3. What is the basis for the assertion in this paragraph? If the only remaining contamination is in the shallow aquifer system as described here then the Institutional Controls in the Southeast Drainage don't seem to address this fact. We suspect that spring contamination is a combination of the sources described and runoff from areas of residual contamination during precipitation.

Response L-78: See response to L-51. The institutional controls for the Southeast Drainage presented in Section 2.6 will be revised to reflect the controls presented in Table 2-12. Institutional controls will be employed to restrict the use of spring water for residential drinking water purposes.

L-79 | 5. Uranium contaminated groundwater above the drinking water standard is identified beneath the former raffinate pits. However, uranium contamination in groundwater is known to extend over a greater portion of the site. The drawings should indicate all areas of contamination above background levels. This comment applies to other contaminants of concern as well.

Response L-79: Although uranium concentrations greater than background may exist on-site, only groundwater exceeding a regulatory or risk-based limit is required to be addressed under CERCLA. The figures will remain as presented.

L-80 | 6. Paragraph 6. Volatiles, including TCE have been detected in nearby springs.

Response L-80: SP-6303 is the only spring with occasional TCE analytical results just above the detection limit of 1 µg/l. Text will be revised to eliminate the reference to nearby springs.

Section 2.4.1.2

L-81 1. General: DOE should describe the nature and extent of groundwater contamination remaining at Quarry; for easy future reference this should include the highest levels of contamination and the estimated number of curies. All areas contaminated above background levels should be identifed on a drawing.

Response L-81: Data regarding the quarry is presented in Section 2.4.3.2. Data for 2001 is presented as a baseline for the long-term monitoring presented in this plan. Historical information is available in annual environmental reports for the site. Only groundwater exceeding a regulatory or risk-based limit is required to be addressed under CERCLA.

L-82 2. A discussion of reduction of nitroaromatics by biotransformation in the reduction zone could not be located in either of the two revisions of the referenced document. The specific location (Section and page number) for this information should be provided.

Response L-82: This is not the correct reference for the citation in question. The correct reference is the *Remedial Investigation for the Groundwater Operable Units at the Chemical Plant and Ordnance Works Areas* (DOE 1997b). This will be corrected in the next revision. See also Response B-20.

L-83 3. Paragraph 1. Although quarry groundwater north of the slough is not a public drinking water source, it is hydraulically connected and contamination does impact the aquifer that is being used as the public water supply.

Response L-83: It is recognized that the groundwater north of the slough is hydraulically connected and has the potential to impact the groundwater on the south side of the slough; however, the groundwater south of the slough has not been impacted. This statement is supported by data collected since 1986. A total of 980 samples from the monitoring wells, RMW-series wells, and the production wells have been analyzed for total uranium. Of these, 90% have been below the average background value of 2.77 pCi/l and none of the samples have been outside the maximum range for uranium (14.3 pCi/l) observed in the Darst Bottoms wells. These data support the conclusion that uranium contamination north of the slough has had no measurable impact on the production wells south of the slough. The discussion in Section 2.4.3.2 can be modified to include some of this historic information.

Section 2.4.3.1

L-84 1. Paragraph 5. It is our understanding that the groundwater divide has shifted to the south. It would be helpful to have a potentiometric map of the site and quarry groundwater, which is updated annually. A set of monitoring wells should be installed to measure static water annually, which may be different than water quality detection wells. Also, the issue of previously contaminated groundwater in vicinity of the disposal cell complicates the evaluation of whether or not the disposal cell is impacting groundwater quality. That being the case, it seems to be inappropriate to base a reduction in disposal cell monitoring activities on a decline in contaminant concentrations compared to baseline. The baseline represents a contaminated condition that is expected to improve over time through natural attenuation; possibly long before the disposal cell liner develops problems.

Response L-84: It is planned to include potentiometric surface maps in Section 2.1.3 – Hydrogeology to present groundwater flow for each site. At the chemical plant, the groundwater divide has shifted to the south of the chemical plant due to dewatering and remediation activities in the former raffinate pit area. Performance of static water level measurements at both the quarry and chemical plant on a specified frequency will be included in the plan. New wells for performing this task are not necessary. The present monitoring well network is adequate to determine the configuration of the water table at the chemical plant and quarry.

The *Disposal Cell Groundwater Monitoring Plan* is presently being revised to include updates to the program. This will include the evaluation of data from the wells to determine whether increases are the result of variations in the existing groundwater contamination or indicate the possible presence of leachate. This revised plan will be included in the next revision of this plan.

L-85 2. Paragraph 12. As previously commented we do not necessarily agree that "uranium presence is predominantly the result of historical surface water runoff." It is possible that current runoff is also a source. Is there a factual basis for this assertion?

Response L-85: Surface water runoff from the site is monitored under the NPDES program. For 2001, the annual average uranium concentrations at the storm water discharge points ranged from 1.8 pCi/l to 7.6 pCi/l. Flow weighted averages were calculated for uranium levels at each of the storm water outfalls to estimate the total uranium that migrated off-site during 2001. The estimated annual release of natural uranium was 2.7 kg, a 99% mass reduction from 1987. Based on this data, it is unlikely that the concentrations observed in the 6300 and 5300 drainages result from this contribution. Historical surface water runoff and resultant residual contamination in the fractured bedrock seem to be the more plausible reason.

Section 2.4.3.2

L-86 1. On principal, the department disagrees with the assertion that low yield means this isn't drinking water or subject to the drinking water standards. It flows into a drinking water source and there is no guarantee that it will not affect that drinking water source sometime in the future. We acknowledge EPA's determination that this is not an aquifer, however, we believe that great care must be taken to make sure existing conditions remain stable.

Response L-86: Comment noted.

L-87 2. The term *facies* is used to describe different depositional characteristics (conditions of origin) within a single rock unit. Bedrock and alluvium are separate units. For clarification, we recommend that the term *facies* be deleted.

Response L-87: Accept.

L-88 3. Paragraph 2. It is our understanding that the monitoring wells adjacent to the Femme Osage Slough did have uranium levels, which corresponded to historic concentrations in the slough, that exceeded the drinking water standard. Subsequent to source removal actions, the concentrations declined to current conditions. Please verify and correct.

Response L-88: The text has been verified and is correct as stated. The text in this section is a snapshot of 2001 data summarized from the *Weldon Spring Site Environmental Report for Calendar Year 2001*. In addition, Section 2.5.2.2 states that the Femme Osage Slough is known to receive contaminated groundwater from the quarry through subsurface recharge.

L-89 4. A statement is needed that contaminated groundwater discharging to the slough (where fishing is conducted) does not represent a risk to users and that the slough water quality will be routinely monitored.

Response L-89: Section 2.5.2.2 discusses that the groundwater impacts water quality in the slough and is not pertinent to the discussion in Section 2.4.3.2. Text will be included in Section 2.5.2.2 stating that uranium concentrations in the slough do not pose a risk to users. Monitoring of the upper section of the slough will be included in the LTSP as suggested.

Section 2.4.4

L-90 1. General. The data presented in table 2-9 is not a representative baseline. 40CFR264.97(g) requires: The sample size shall be as large as necessary, to ensure with reasonable confidence, that a contaminant release to ground water from a facility will be detected.

Response L-90: Disagree. The sample size was adequate to fulfill this requirement.

L-91 2. The data in table 2-9 is a summary from 1998 to mid-2000. 40CFR264 (commonly refereed to as RCRA) is intended for hazardous waste disposal facilities and has been identified as an ARAR for the disposal cell. The number of samples is not in question in this case, but active soil remediation ended in mid-2000. The department suggests that applying this data in a post-closure monitoring situation is inappropriate, as the data is biased high because of site operations and would make detection of releases from the cell difficult. A more appropriate baseline for disposal cell monitoring should consist of post-remediation samples preferably significantly separated from construction activities and after analyte levels have stabilized for a year or more.

Response L-91: Table 2-9 presents data collected during 1997 and early 1998, which is the time period when baseline sampling was performed for the 5 original disposal cell monitoring wells. DOE has considered the suggestion to apply a more appropriate set of data for comparison purposes during detection monitoring. The original baseline data in Table 2-9 has been used to evaluate the appropriate analytes for the disposal cell monitoring program. A "rolling" window of data will be used to evaluate data over time. This approach should take into account the changes in the groundwater quality due to source removal at the chemical plant and reduce the likelihood of masking impacts to the groundwater system in the unlikely event that the disposal cell should leak. The Disposal Cell Monitoring Plan is currently being updated and revised as necessary and will be included in the next revision of the LTS Plan.

L-92 3. Paragraph 1. It has not been demonstrated that Burgermeister Spring is the emergence point for all groundwater from the Chemical Plant site, as implied.

Response L-92: Disagree. The text is correct that Burgermeister Spring is an emergence point for groundwater originating from the chemical plant. There is no inference that all groundwater emerges at this point.

L-93 4. Paragraph 2. Groundwater monitoring prior to cell placement " although considered a baseline" can be misleading. Since the groundwater was and is contaminated, it has not been clearly demonstrated how releases from the cell (other than in the Leak detection system) would be identified in the groundwater monitoring. The fact that levels go down below what's identified and remain, could indicate a continuing source of uncontrolled contamination beneath the waste disposal cell or released directly from the waste cell itself.

Response L-93: A list of indicator parameters and waste constituents that would provide a reliable indication of leakage from the disposal cell has been developed. The most reliable means of detecting impacts from leakage of the disposal cell is to track parameters that exist in significantly higher concentrations in the leachate than in the groundwater. A general increase in these parameters in the groundwater would be easily detectable and would almost certainly be due to cell leakage since all other sources have been remediated. The following constituents have been identified as indicator parameters

for the disposal cell detection monitoring program: barium, uranium, iron, and manganese. All four have been detected in concentrations at least an order of magnitude higher in the leachate than in the underlying groundwater. Also see Response L-91.

L-94 5. Paragraph 3. States "No baseline values are presented for volatile organic compounds… … because these constituents were not detected during baseline sampling. The department believes that all contaminants of concern should be included in the baseline evaluation, therefore, the table should include these omitted analytes as not detected.

Response L-94: This plan is currently being updated. The analyte list has been modified to include the COCs listed in the *Record of Decision for the Chemical Plant Site.* This list does not include VOAs, but does include PCBs, PAHs, and nitrobenzene.

Section 2.5.2.1

L-95 1. The streams are characterized throughout this document as if they only convey storm water runoff. However, these streams also gain baseflow from the bedrock and soil subsurface. They most surely gain some contaminants in that fashion. The fact that sampled surface water near the site is above background confirms the need for continued periodic sampling. This comment also applies to surface water locations associated with the quarry.

Response L-95: The tributaries from the Ash Pond and raffinate pit areas are losing stream segments; therefore they do not gain baseflow from the bedrock and soil surface and convey only storm water. Also, water lost to these tributaries cross drainages and emerges at Burgermeister Spring, as supported by surface dye studies performed by MDNR-DGLS. The tributary from the Frog Pond is indicated to be gaining, and therefore gains baseflow. The contaminants of concern in the Frog Pond area are nitroaromatic compounds, which photodegrade when they enter the surface water and would not be observed in the surface waters. This is supported by historical data from Lake 36. No surface water monitoring points are warranted.

Monitoring of the upper section of the slough will be included in the LTS Plan, as suggested.

L-96 2. Paragraph 1. In at least two places in this paragraph DOE indicates areas were remediated and confirmed CLEAN. This is most likely an inaccurate statement. Areas have likely been remediated to the approved cleanup or remediation goals. To indicate the areas are CLEAN, unless they have been remediated to background or non-detect, is inappropriate.

Response L-96: Text will be revised to further describe what is meant by "clean." DOE's position is that if "cleanup criteria" are established and then achieved, the area is "clean".

Section 2.6

L-97 1. In accordance with 10 CSR 25-7.264.264(2)(G) incorporated by reference in 40 CFR 264.116, facilities with waste remaining in place shall "submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the Regional Administrator, a survey plat indicating the location and dimensions of landfills cells or other hazardous waste disposal units with respect to permanently surveyed benchmarks. This plat must be prepared and certified by a professional land surveyor. The plat filed with the local zoning authority, or the authority with jurisdiction over local land use, must contain a note, prominently displayed, which states the owner's or operator's obligation to restrict disturbance of the hazardous waste disposal unit in accordance with the applicable subpart G regulations." DOE shall comply with this regulation.

Response L-97: Although this is an administrative requirement which does not usually apply at CERCLA sites, the substantive requirements of this regulation will be met by the establishment of institutional controls for the disposal cell.

L-98 2. Paragraph 2. Since Table 2-12 is discussed in this paragraph, the paragraph should include a statement that the proposed institutional control mechanisms have been negotiated with and agreed upon with the "Parties to Agreement" shown in Table 2-12. Since institutional controls are critical to long term stewardship of the site, the institutional control mechanisms must be established now and implemented before or soon after final remedy selection.

Response L-98: DOE indicates in Table 2-12 that ICs have not yet been implemented. As ICs are finalized, DOE will insert the instruments in Appendix B of the LTS Plan and will revise the text appropriately.

L-99 3. Paragraph 3. "DOE will seek to maintain…." is somewhat ambiguous. Should be changed to something like "DOE will implement Institutional Controls in order to maintain….".

Response L-99: Text will be changed as suggested.

L-100 4. Paragraph 4. Last sentence, when will DOE establish the IC's?

Response L-100: The next revision of the LTS Plan will contain draft language for institutional controls. Institutional Controls will also be the subject of a focused public work session in the fall of 2002. DOE will be working toward establishing these controls, but there is no set timetable.

Section 2.7

L-101 1. This section references aerial photos, maps, as-built drawings etc….what are these, where will they be located and how are they accessed? One set should be at the site and another at the local repository.

Response L-101: DOE will retain a set of drawings depicting current as-built conditions at the Weldon Spring site through 2004, and then with the local site monitoring and maintenance subcontractor. DOE does not intend to maintain this information in a local repository, as indicated in Section 3.13. However, remedial action plans and other information depicting final site conditions will be available through the LTSM Program document portal. See Responses A-142, A-212, B-27, B-29, and B-58.

L-102 2. Annual inspections will likely not be sufficient to identify and document issues and concerns for this site as well as the need to respond in a timely fashion if problems are identified

Response L-102: DOE believes that an annual inspection is the appropriate frequency. Monitoring and maintenance activities at the site will also present opportunities to supplement the annual inspection. If problems are identified during the annual inspection, DOE will not wait an entire year to follow up on them.

Section 2.7.1

L-103 1. What site conditions were documented? Presumably, it was more than drawings and maps. The department believes that documents pertinent to baseline conditions include reports of residual contaminants, design considerations and specifications for engineered site features, as built documents, identification of significant departures from initial design and indication of any impact on expected performance. Also, where will this baseline information be maintained? As a minimum, one set should be maintained at the site and another at the local repository. Each repository should be inventoried periodically to insure their ordered availability.

Response L-103: DOE is in the process of developing remedial action reports that will depict final site conditions and demonstrate that the selected remedies for the completed OUs have been implemented and are protective. Some detailed information will be included by reference. These reports will be maintained as indicated in response L-101.

Section 2.7.3

L-104 1. The department should be included in the initial GJO inspection of the site, presumably anticipated as the responsibility transitions from Oak Ridge to Grand Junction.

Response L-104: DOE will notify the state of the inspection schedule at least 30 days before the inspection. See Section 3.2.1, paragraph 1, sentence 4 and Item 1 of the

annual inspection checklist on page D-5. DOE encourages the state to send representatives to accompany inspectors.

Section 2.7.5.

L-105 | 1. Although the Weldon Spring Feed Materials Plant processed various forms of ore and ore concentrates, it has generally never been casually referred to as “operation of the mills”. This sentence should be corrected or expanded to describe the full scope of the operations from a historical perspective. This appears to be a carry over from LTS plans developed for MILL sites in the west.

Response L-105: See Response L-21.

Section 2.8.1

L-106 | 1. Fencing. Does DOE plan to fence the leachate water treatment plant building?

Response L-106: The LCRS sump area is fenced to mitigate unauthorized entry. The building itself is locked to prevent unauthorized entry. There are no plans to fence the building. The LTS Plan will be revised to clarify the extent of fencing.

L-107 | 2. Information signs. The plan should indicate that DOE will continue to list a toll-free number for DOE contact.

Response L-107: One of the phone numbers presented in Section 2.8.1 (877-695-5322) is toll free.

Section 2.8.2

L-108 | 1. Are the elevations of these markers known and recorded? Will these be used as part of the settlement evaluation inspection? If so, add to the inspection sheet.

Response L-108: These markers are clustered too close together to distinguish between their independent movements. One marker incorporates a survey plate that will be used in future settlement evaluations. Coordinates and elevation recorded for this plate at installation will be included in the Plan.

Section 2.8.3

L-109 | 1. The relatively sparse monitoring networks make ongoing monitoring very important to prevent possible "surprises". Surface water should also be monitored into the future and should be represented here too.

Response L-109: DOE disagrees that the monitoring network is “sparse.” Monitoring requirements are established through CERCLA RD/RA Workplans and then these requirements roll up into the LTS Plan.

L-110 2. References construction details and lithologic logs. Copies of these should be available at the site and the local repository.

Response L-110: DOE will keep copies of this information at the site through 2004, and with the local site monitoring staff after that. These data will not be maintained at the local repository at Middendorf-Kredell Library. DOE intends also to make this information available through the GIS system at http://gems.gjo.doe.gov/index.cfm. This system can be accessed through the LTSM Internet site.

Section 3.0

L-111 1. This section does not indicate how documents can be retrieved from the Interpretive Center. Will a copier be available? Can documents be borrowed or removed from the site? Who will check the documents in and out?

Response L-111: The public participation section of this chapter will be revised based on this and other comments. DOE's concept is that a copy of the Administrative Record will available at the Interpretive Center for review. Whether copies can be made on the spot has not been decided. This issue may be discussed at the upcoming public work session on public participation. Records will not be allowed to be removed from the premises.

Section 3.1

L-112 1. Paragraph 1. Remediation has not yet been completed and will not be complete until all remedies, including institutional controls, are in place.

Response L-112: Comment noted.

Section 3.1

L-113 1. Paragraph 1. Indicates the site will be inspected annually. Annual inspections are not adequate at the disposal cell. A minimum of semi-annual inspections of the disposal cell should be performed.

Response L-113: See Response L-102

L-114 2. DOE must commit to CERCLA "periodic" reviews in perpetuity if waste remains on site.

Response L-114: Section 3.4 discusses DOE's commitment to the EPA Five-Year Review process under CERCLA.

L-115 | 3. DOE is responsible for ALL [delete - the regulated] radiological and other hazardous substances that remain at the Weldon Spring site.

Response L-115: DOE will revise the text as requested.

L-116 | 4. Additionally, EPA, in consultation with the state of Missouri, MAY or is expected to [delete – will] concur in changes to the LTS Plan.

Response L-116: DOE cannot implement changes to the LTS Plan without regulator concurrence, as qualified in the revised text proposed in Response E-2.

Section 3.2.1

L-117 | 1. General. There should be discussion of continuing site presence by DOE or a designee for preventative measures and detection of vandalism or other uncontrollable forces. While Section 3.3.1 does discuss this in general, it does not provide details of an on-site caretaker, or how DOE will provide for an on-site caretaker.

Response L-117: See Response L-17

L-118 | 2. Paragraph 2. States that "differential settlement of the cell cover will be monitored through the use of terrestrial and/or aerial surveys, and rock gradation changes in the cell cover…will be visually assessed and evaluated" every five years. It is not clear how DOE will be able to identify if the soil cap beneath the rock cover settles and/or ponds. It will be very difficult or nearly impossible to do this visually. DOE shall specify expected settlement and allowable tolerances in the inspection plan and identify how settlement of the soil cover will be monitored to compare actual settlement to expected values and ensure conformance with those tolerances. A similar comment would apply to the issue of visual evaluation of rock gradation.

Response L-118: The Clay Infiltration Barrier is covered with a series of cohesionless layers. Aggregate materials do not sustain vertical or horizontal tension and their settlement emulates (parallels) the one corresponding to the underlying cohesive layer. As explained in Response L-65, there are no "expected" values with regard to settlement. The design estimated conservative upper limits, necessary for calculating the maximum stresses that various components have to accommodate. Moreover, the methodologies used to calculate the response to these stresses were also conservatively selected. For example, differential settlement is more significant than total settlement with regard to the cracking potential of the clay barriers. The gradient of a given differential settlement is much more relevant than the differential settlement itself. For ponding of water to occur, the settlement has to overcome the 7.5% slope of the cover, which would be very unrealistic. Any deterioration of the rock gradation would follow a similar logic. The cover was designed to resist erosion in a PMP event but the rock gradation was more than doubled in order to create a hostile environment for vegetation growth.

Section 3.2.2

L-119 | 1. General. More definition as to how the physical inspection will be conducted is needed. Precise elevation surveys, aerial photography, GPS and other state-of-the-art measurement tools may be appropriate to evaluate cell performance and stability but this can not be determined from the information presented here. More details on the "how this will be done" is needed.

Response L-119: DOE will further develop the inspection criteria.

L-120 | 2. How will the inspectors determine all the aspects they claim to be able to inspect? Many of these will not appear obvious to an individual looking at the site once. A comprehensive set of detailed measurements and projections will be necessary to evaluate the integrity of the waste disposal cell. If a weed or tree appears, (which they will) will it be excavated to determine if the roots penetrated the cap?

Response 120: Visual inspection is adequate to identify concerns about site integrity, when evaluated in conjunction with monitoring results and specific requirements of 5-year reviews. Inspector qualifications are presented in Section 3.2.4. LTSM Program inspectors evaluate many sites in diverse settings, and the program follows a standard practice of dispatching at least one staff inspector to a site who has previous site experience. If necessary, plant encroachment will be evaluated by LTSM Program plant and cover performance specialists who will determine if encroachment poses a risk to cover integrity. See http://www.gjo.doe.gov/programs/ltsm/general/tech_doc/index.htm and http://www.gjo.doe.gov/programs/ltsm/title1/grandjct/ltsp/gjt-ltsp.htm#VOLUNTEER%20PLANT%20GROWTH, Section 2.7, for examples of this work.

L-121 | 3. A reasonably detailed inspection procedure for viewing the Southeast drainage does not exist. It should be well established that contamination remaining in the Southeast drainage is not considered static, DOE does not control the flow or erosion of the drainage course. As a result they do not presently control the contaminated sediments that were left in the drainage area. A comprehensive walkthrough and detailed radiological survey (hand held instruments 2x2 etc) of the drainage course appear appropriate at a minimum to determine if the contaminated areas remain stable. Although some cleanup was conducted previously, the remaining contamination can be easily eroded to the lower portion of the drainage where the public is likely to visit.

Response L-121: See response to L-23.

L-122 | 4. Paragraph 5. Last sentence. How will local citizens and responsible government entities have access to this information?

Response L-122: Selected inspection photographs will be posted to the LTSM Program Internet site. For an example, see http://gems.gjo.doe.gov/index.cfm and select the

Shiprock, New Mexico site. You can also access this site from http://www.gjo.doe.gov/, select programs, then LTSM Program, then the Shiprock, New Mexico, site. DOE also will post the annual report, which will include photos selected to present specific site information.

Section 3.2.3

L-123 1. Refers to the inspection checklist in Appendix D. After review of the inspection checklist, it appears there is no place in the checklist to outline if each area inspected is in satisfactory or unsatisfactory condition. Also, there are no timeframes on when an unsatisfactory condition will be remedied. DOE should revise the inspection checklist to include these features. As stated previously, inspections should be performed semi-annually. Appendix D refers to Table 3-7 as being the "Potential Disposal Cell Event Scenarios". The reference appears to be incorrect and should reference Table 3-6. Please revise.

Response L-123: The checklist is intended as a guide for inspectors to evaluate site issues and features. Inspectors note field conditions on field inspection maps or the checklist, which become part of the permanent site record. Inspection results are presented in an annual report. The timeframe for addressing site concerns is driven by risk, as discussed in Section 3.3.1. Because of frequent site visits by monitoring crews and high public visibility of the cell and site, DOE maintains that annual inspections are protective. DOE will revise the reference to Table 3-6.

Section 3.2.4

L-124 1. Paragraph 2. A biology, ecology, or range management background does not appear to be appropriate for a detailed inspection of compliance with engineered specifications. Please delete this reference. All inspections shall ultimately be certified by a professional engineer registered to practice in Missouri and Surveys shall be certified by a Missouri registered Land Surveyor.

Response L-124: The text states that DOE will select inspectors on the basis of site conditions and inspector expertise. Site conditions may demand the expertise of an inspector trained in the life sciences. Please refer to Response L-120. Annual inspections do not require certification by a MO-licensed professional engineer. Land surveys will be certified by a MO-registered land surveyor.

Section 3.2.5

L-125 1. The department must be given the opportunity, as part of our role as independent oversight agency, to accompany DOE inspectors in performance of the semi annual and follow-up inspections.

Response L-125: See Responses L-104 and L-123.

Section 3.3.1

L-126 1. The LTSM Program **will** conduct follow-up inspections… (delete the word may). The word **may** appears twice in the second paragraph. These should be deleted.

Response L-126: DOE will not make the requested edit. The sentence following the bullet list on page 3-5 states, "Once a condition or concern is identified at the site, LTSM Program personnel will evaluate the information and decide whether to respond with a follow-up inspection." Section 3.3.1 further explains that DOE will use discretion in deciding when and how urgently a follow-up inspection is required.

L-127 2. Paragraph 4. Who and which office at DOE is to be notified? In that same sentence the word "even" should be "event".

Response L-127: The St. Charles County Sheriff will be requested to notify the LTSM Program in Grand Junction, using the phone lines that are monitored continuously. DOE will revise the text as requested.

Section 3.3.2

L-128 1. Refer to comment under Section 3.2.4.

Response L-128: See Response L-124. This is especially true of a follow-up inspection focused on a known condition.

Section 3.3.3

L-129 1. A copy of the follow-up reports shall be provided to the department as they are completed. Waiting to provide these until the next annual report is issued is not appropriate.

Response L-129: DOE will provide a separate report of a follow-up inspection if the condition threatens to compromise containment integrity or exposure of or risk to the public or the environment.

Section 3.4

L-130 1. Paragraph 1. DOE incorrectly reefers to a "5-year review." CERCLA prescribes a periodic review whenever indicated but at intervals of no more than five years. The LTS plan should correct this language and make it clear that a "periodic review" will be conducted whenever conditions warrant.

Response L-130: DOE's Federal Facility Agreement specifically refers to a Five-Year Review. EPA's 2001 guidance document is titled "Comprehensive Five-Year Review Guidance." DOE believes that a five year frequency is appropriate for the remedies selected at the Weldon Spring site.

L-131 | 2. Paragraph 2. Insert “EPA”- i.e. “DOE will consult current **EPA** guidance

Response L-131: The text will be revised as suggested; however, DOE may also consult internal guidance.

L-132 | 3. Paragraph 3. States that the most recent Five-year review was completed in June 2001. The review report was not submitted to the department until early September 2001. The report was reviewed, relative to the criteria listed in corresponding EPA guidance, and found to be incomplete. Comments were provided to DOE in January 2001, and we are still hopefully awaiting a response some eight months later. DOE should conduct a proper and complete “periodic review” as soon as reasonably possible to overcome the deficiencies found in the June report. This would give all participants an indication of what might be encountered in future reviews and possibly assist in further development of the Stewardship Plan.

Response L-132: See response to comment L-18.

Section 3.5

L-133 | 1. General. Needed access easements must be enforceable and last as long as monitoring is required.

Response L-133: Comment noted.

L-134 | 2 Paragraph 3. References an operation and maintenance plan for the leachate collection and removal system. Please see comments on sections 3.6.3 and Table 3.6 for the comments on proper operation of the leachate collection and removal system. Also, access easements should be obtained from the Missouri Department of Conservation for the road from Route D to the Leachate Collection Sump.

Response L-134: See Responses L-149 through L-155 and L-178. DOE recognizes and is pursuing the need for a real estate agreement to assure access from Route D to the LCRS. Please note that access to the LCRS is also available from on-site using the cell perimeter road: however, the Route D access is more desirable to facilitate hauling of the leachate.

L-135 | 3 Paragraph 4. Consideration should be given to periodic monitoring for radon as well as methane.

Response L-135: See Responses H-16 through H-18.

L-136 | 4 Paragraph 6. What criteria will trigger “control” on the cell cover? If vegetation is not monitored and maintained outside the proposed 300-foot buffer zone what will prevent erosion from exposing subsurface zones of residual contamination that exceeds surface criteria?

Response L-136: "Control" is meant as an activity rather than as a criterion. Whether vegetation becomes a concern rather than a nuisance is based on the species observed at each inspection event. Trees will not be allowed to develop, but other species are not relevant to performance. The vegetative cover outside the buffer zone consists of natural prairie species selected for their capability to prevent erosion. Erosional features that may endanger the cell will be observed, but an active vegetation maintenance program is not expected to be needed at this time.

Section 3.6.1.1

L-137 1. Paragraph 1. See comment from 2.4.4 above. Comparison of actual data to "baseline" values may provide little information.

Response L-137: See responses to L-91 and L-93.

L-138 2. Paragraph 2. It is not necessarily appropriate to conduct or initiate compliance monitoring when results from two consecutive detection periods (this could be inferred to be a period over two years) indicate a statistically significant increase in concentrations above baseline. Baseline groundwater conditions are contaminated and do not necessarily provide a fair assessment of performance of the waste disposal cell. Further consideration of this issue is needed.

Response L-138: See responses to L-91 and L-93.

L-139 3. Paragraph 3. This paragraph seems to negate the reason for detection monitoring. If DOE is aware of some other way to evaluate cell performance, then this should be specified in the plan. Otherwise, statistical increases in detection monitoring shall trigger compliance monitoring unless the department agrees that the cause is not related to cell performance.

Response L-139: The Disposal Cell Monitoring Plan is currently being updated and revised as necessary and will be included in the next revision of the LTS Plan. Also see responses L-91 and L-93.

L-140 4. Paragraph 4. References Appendix F for the groundwater-monitoring plan. This plan was not included in the report. The plan proposes to change from variance analysis to an intrawell comparison using the tolerance interval approach. While this may be appropriate, the department has had no indication that a change was proposed. More time, and a specific proposal and justification from DOE, is needed to evaluate this approach. The proposed alternative statistical procedure may be acceptable. The department previously requested that the entire cell ground water monitoring plan be revisited. Much information has been obtained since the plan was originally put in place, which should be considered and addressed.

Response L-140: The Disposal Cell Monitoring Plan is currently being updated and revised as necessary and will be included in the next revision of the LTS Plan.

Section 3.6.1.2

L-141 1. The objectives and general scope of the future monitoring plans referenced here should be established in this document if it is to be approved. A start in this direction is made regarding the quarry monitoring but not for the GWOU.

Response L-141: DOE's purpose at this point is a continuation of the existing groundwater monitoring pending a final decision under CERCLA for the Groundwater Operable Unit.

Section 3.6.1.3.

L-142 1. General. The remedy prescribes long-term monitoring to confirm that natural processes are effective in attenuating ground water contaminants before they reach the St. Charles County Well field. The QROU ROD calls for the use of institutional controls to minimize exposure to residual contaminants.

Response L-142: A statement will be inserted into the text indicating that institutional controls will be employed to prevent groundwater usage.

L-143 2. DOE should monitor for any increase in contaminant concentrations in the surface water and sediments of the slough as well as the groundwater to the north and south.

Response L-143: As indicated in comment L-89, monitoring of the surface water in the upper portion of the slough will be included in the LTS Plan. Sampling of the sediments is not warranted. The sediments in the slough require no use restrictions. It has been shown that the average uranium levels in the slough have decreased, indicating a reduced potential for impact to the sediments.

L-144 3. DOE should take additional appropriate response actions if groundwater south of the slough shows an increasing trend; not waiting until they exceed a trigger level of 20 pCi/L in a known drinking water source.

Response L-144: Section 3.9.2.2 states that if a consistently upward trend in uranium or 2,4-DNT is observed for three consecutive sampling events in the groundwater north or south of the slough, DOE will investigate the contaminant source and transport mechanism. This contingency is not fixed to the 20 pCi/l trigger level.

L-145 4. Paragraph 2. DOE removed major sources of possible contamination but did not remove the entire source of residual contamination as residual contamination remains in fractures, soil, and suspended or dissolved in groundwater. Several hundreds of kilograms of uranium may remain and needs to be carefully monitored.

Response L-145: Text will be revised to indicate that the "major" sources were removed. DOE will carefully monitor the groundwater in accordance with the provisions of the Quarry Residuals Operable Unit Record of Decision and the RD/RA workplan, which are described in the LST Plan.

L-146 5. Paragraph 12. The proposed 20 pCi/l is an inappropriate trigger to use to indicate possible increase in uranium concentrations south of the slough as individual wells have shown inconsistent historic values. Reported results for individual wells should be evaluated by an appropriate statistical method to determine when an increasing trend is evidenced. In practice, this approach should result in detection of upward trends in uranium concentrations before the 20 pCi/l MCL level is exceeded.

Response L-146: See response L-144. None of the wells south of the slough have exceeded the trigger level of 20 pCi/l.

Section 3.6.2.1

L-147 1. DOE considers spring water to be an expression of groundwater; however, it is listed as a surface water monitoring location and is clearly impacted rapidly and significantly by precipitation. Sampling Burgermiester Spring only during high flow as proposed is inappropriate. Sampling during high flow is expected to show more diluted concentrations now that soil remediation at the Chemical Plant is completed. Data presented in table 2-6 supports this understanding. Other potential surface water monitoring locations should be identified to further document the quantity of residual contaminants, which are possibly leaving the site as a result of periodic erosion. High flow conditions may be indicated for this purpose.

Response L-147: Table 3-4 in the LTS Plan is incorrect regarding the sampling at Burgermeister Spring (SP-6301). This spring has been and will be sampled during base (low) flow conditions. This correction will be made in the next revision of the document.

See response L-85 regarding surface runoff.

L-148 2. Monitoring efforts and contingency plans as described in the plan are too vague to be of any use.

Response L-148: Comment noted.

Section 3.6.3

L-149 1. Paragraph 2. Indicates that leachate quantities will be confirmed using a manual gauge stick. DOE shall explain how this will be performed/calculated using a manual gauge stick.

Response L-149: Operating specifications, manuals and inspection criteria will be developed and referenced in or appended to the LTS.

L-150 2. Paragraph 3. States that DOE will monitor the flow rate at each of the two secondary liner conveyance pipes. This shall also be explained in more detail. Also, as previously noted, the “dry well” next to the sump is not dry. The reason for the presence of liquid in a closed system, which should have been dewatered by now, must be addressed.

Response L-150: See Responses L-71 and L-149.

L-151 3. Paragraph 4. Indicates that leachate levels and flow rates will be monitored and recorded daily at the outset. As a reliable database is generated, DOE may modify the sump level monitoring frequency. At a minimum, the leachate shall be pumped and recorded to keep the sump from reaching maximum capacity. In accordance with 40 CFR 264.303(c), the leachate from the leak detection system sump shall be pumped and recorded at least monthly. If the liquid level in the sump stays below the pump operating level for two consecutive months, the amount of liquids in the sumps must be pumped and recorded at least quarterly. If the liquid level in the sump stays below the pump operating level for two consecutive quarters, the amount of liquids in the sump must be pumped and recorded at least semi-annually. The frequency will divert back to monthly if the levels increase. Since the leachate is pumped manually at DOE, the pump operating level for this site will be equal to the maximum amount of liquid in the sump as defined in 40 CFR 264.303(c)(3). This does not include the secondary containment of the sump or the storage capacity of the cell liner system. DOE shall revise this section to include this requirement. DOE shall also include the maximum capacity of the sump. (From page 2-19, it appears the capacity is 11,200 gallons).

Response L-151: Agree

L-152 4. Paragraph 6. In accordance with 10 CSR 25-7.264(2)(N)2.G., "the owner/operator shall analyze leachate from the leak detection system at least annually." "At the first occurrence of leachate in the leak detection system, the owner/operator shall analyze leachate from that system for the complete list of parameters identified in 40 CFR 264 Appendix IX." After the initial round of sampling, the leachate shall be analyzed for the constituents detected in the Appendix IX sampling and all other constituents known to be disposed of into the landfill. Minimally, the leachate in the leak detection system shall be analyzed annually. DOE shall revise the plan to include this requirement and how it will be performed.

Response L-152: See Response L-65. The cited state regulation is not an ARAR under the Chemical Plant ROD.

L-153 5. Paragraph 7. Outlines contingency treatment for the leachate pumped from the sump. DOE shall obtain approval from the WPCP for this activity prior to operation. Also, DOE shall identify how the contingency wastewater treatment system will be fully assembled and in operation before leachate has backed up into the cell liner system. Operating specifications and manuals and inspection criteria for the system shall be included as a part of the Stewardship Plan.

Response L-153: The DOE will continue to coordinate with the MDNR-Water Pollution Control Program as part of implementing any treatment process. The Train 3 process was previously approved and construction was underway when the MSD approval caused DOE to pause. DOE will maintain the current NPDES permit for outfall 007. The DOE intends to have the equipment necessary to implement the contingency plan staged in the treatment building to facilitate a quick response, if it is needed. The likelihood of leachate backing up into the disposal cell is remote since we have the capability to store approximately 90 days of leachate at the current rate of leachate generation. It is important to note that the leachate rate is decreasing over time thus increasing the days of storage that would be available. Operating specifications, manuals and inspection criteria will be developed and referenced in or appended to the LTS.

L-154 6. Paragraph 9. DOE has previously agreed to an Action Leakage Rate of 100 gallons per acre per day.

Response L-154: Agree. DOE's intention was to take note of the actual calculated hydraulic capacity of the LCRS. We inadvertently omitted the agreed upon Action Leakage Rate (ALR) of 100 gallons/acre/day. This will be revised in the next version of the LTS Plan.

L-155 7. This report barely mentions an ALR and does not include much response actions if the ALR is exceeded. In accordance with 40 CFR 264.304, there are requirements if the ALR is exceeded. Also, see 10 CSR 25-7.264(2)(N)2.I. for the state requirements if 10% of the ALR is exceeded. DOE shall revise the plan to include these requirements.

Response L-155: DOE and MDNR agreed to the ALR of 100 gallons/acre/day after extensive negotiations. This comment by MDNR attempts to reopen this agreement and apply a 10% threshold requirement. Abnormal functioning of the Leachate Collection and Removal System and the potential responses are discussed in Table 3-6 of the LTS Plan.

Section 3.6.4.

L-156 1. To assure the radon barrier remains protective, add a measurement and evaluation of radon release to the periodic CERCLA review.

Response L-156: DOE does not intend to monitor the cell cover for radon unless evidence suggests the cover integrity may have been compromised. As long as the

compacted soil layer covering the cell is intact, radon will decay before it can percolate to the surface. See also Response H-16.

L-157 2. DOE has not sufficiently justified not conducting air monitoring to determine if a release has occurred. A failure of the radon barrier and or release of radon would not necessarily be visible to the naked eye. It is also reasonable to expect the cell to function adequately upon completion, to verify continued proper performance of the radon barrier. It was inappropriate for DOE to cease radon monitoring in 2000 as the last waste was placed in the cell in 2001.

Response L-157: See response to comment H-18. Also, radon monitoring was unnecessary in 2001 as all waste containing significant quantities of radium were placed in the cell and covered prior to 2001. Radon flux monitoring showed that 1-foot of radon/infiltration barrier was sufficient to keep radon gas from leaving the cell.

Results of radon monitoring during 1998 through 2000, when the majority of the radium-bearing waste was placed in the cell, further show that radon monitoring was unnecessary in 2001. During this period all off-site locations were statistically indistinguishable from background radon levels, and all but two site perimeter locations were statistically indistinguishable from background radon levels. The above-background locations were both along the site west perimeter adjacent to the Army Property, where public access was extremely limited, and neither location exceeded the public dose limit or the DOE Derived Concentration Guideline for Rn-222.

Section 3.7.

L-158 1. Monitoring of institutional controls not only implies that the sites be viewed to confirm that construction activities and use activities are consistent or less than anticipated (ie. the remedy is protective). Verification that the necessary legal instruments still exist and are accessible is a key component.

Response L-158: DOE will incorporate checks of county records to verify that deed restrictions and other IC instruments remain associated with affected property.

Section 3.12

L-159 1. As noted by the Stakeholders, Public Participation is sadly lacking and does not contain much, if any useful information. It is also recommended that they include any information that is mentioned in other documents and not just cite them. For example, in this section the reader is referred to the “Long-Term Surveillance and Maintenance Program Plan” (DOE 1999a). This information should be included in this section.

Response L-159: See Response B-56.

Section 3.13

L-160 1. Access and Retrieval, Paragraph 3. The word “may” is again used to describe what is being proposed to be available at the local site. The word “may“ should be deleted and the word “shall” inserted.

Response L-160: See Response B-58.

Tables

L-161 Table 1-1

1. By including the DOE orders the narrative and chart imply they are enforceable. These are only enforceable within DOE as guidance and have not been promulgated. The report should make this clear.

Response L-161: DOE will revise the text to indicate that DOE orders are not enforceable by outside agencies.

L-162 Table 2-2

1. The Holocene is incorrectly listed in the column identified as “Series”. The Holocene is an *epoch* of the Pleistocene Series.

Response L-162: According to the *Dictionary of Geologic Terms* the Quaternary is subdivided into Pleistocene and Holocene epochs or series. It comprises all geologic time or rocks from the end of the Tertiary to and including the Holocene. The use of Holocene is consistent with that of other documents prepared by both the DOE and the USGS.

Table 2-3

L-163 1. Indicates that uranium, thorium, radium, nitroaromatic compounds, metals, asbestos, PAHs, and PCBs were placed into the disposal cell. Page 3-8, table 3-4, outlines the contaminants of concern for the groundwater detection monitoring program. Table 3-4 does not include PAHs or PCBs in the constituents to be monitored. In accordance with 40 CFR 264.93, a facility shall monitor for the constituents "that are reasonably expected to be in or derived from the waste contained in a regulated unit." The plan shall be revised to include all the constituents known to be in the waste disposed of into the cell.

Response L-163: See response L-94.

L-164 2. This chart should include all vicinity properties, (ARMY, DOC, etc) that are not cleaned up to unrestricted future use standards.

Response L-164: See comment L-36.

L-165 3. The Katy Trail, owned by the department, requires institutional controls. Also, there was a culvert pipe under the WSOW access road that was grouted. This culvert would need to be managed in the future if it were ever removed.

Response L-165: DOE’s Real Estate Officer is investigating land ownership. Whether MDNR owns the underlying fee or a right-of-way will be established and MDNR will be

added to any institutional controls required on its property. The WSOW access road, also known as the Army Road, has a grouted segment of the Chemical Plant process sewer line and a storm water culvert. The segment of the process sewer line was grouted in order to ensure that no future use could be made of this pipe. It was evaluated prior to grouting and it met the volumetric soil cleanup confirmation criteria. Since it would not require excavation, it is considered the same as any other residually contaminated soil left in place. ORISE participated in this evaluation. The grouted segment was determined to require no further management since the grouting effectively eliminated any future use as a pipe; therefore, DOE does not believe institutional controls are needed at this location.

The storm water culverts underneath the Army road do meet (are below) DOE Order 5400.5 U-238 surface contamination guidelines for unrestricted use. No institutional controls are required.

L-166 4. Table 2-5, 2-6 & 2-7 could use some clarification. For the average person reading these tables it is not clear if these numbers should be of concern. The all important question asked by citizens is -"Is this safe?"- and should be answered to the best of DOE's ability.

Response: The tables provide the drinking water standards for the specific reason of providing a point of comparison. If MDNR has a specific suggestion to improve the presentation of this information, DOE would like to consider it.

L-167 Table 2-12

1. Refer to the previous comment regarding institutional controls for the Katy Trail.

Response L-167: See Response L-165

L-168 Table 3-1

1. Items such as "conduct regular inspections, monitor groundwater, monitor institutional controls" need definition of a time span or occurrence frequency. The wording as shown is too vague.

Response L-168: Table 3-1 identifies site-related risks and the department's response to control those risks. The text following the table informs the reader that specific implementation plans are presented in the sections that follow, as shown in Table 3-2.

Table 3-4

L-170 1. Sampling frequency should be quarterly. Same comment to the paragraph following the noted table.

Response L-170: DOE is currently revising the *Weldon Spring Site Disposal Cell Groundwater Monitoring Plan* and the suggested sampling frequency is being evaluated.

L-171 2. Monitoring is proposed to be semi-annual. The department advocates quarterly sampling for several years, until a base line post cell closure can be established. The monitoring parameters list does not include any of the recycled uranium constituents (i.e. Pu, Np, Tc-99). These constituents should be monitored at least annually.

Response L-171: The disposal cell detection monitoring program does not include the recycled uranium constituents because they were not detected in samples of raffinate, which is the most likely place for them to be. See response to comment A-7 for a compete discussion on the facts of recycled uranium at Weldon Spring. See Response L-170 in regard to sampling frequency.

L-172 3. The Disposal Cell analyte list should be more representative of the identified contaminants of concern as listed in the *Baseline Assessment for the Chemical Plant Area of the Weldon Spring Site, November 1992*

Response L-172: See response L-94.

L-173 Table 3-5

1. Why are Tc-99, Np and Pu not included? While quarterly sampling for these constituents may not be needed, at least annual checks should be made. If detects are low to non-detect over a reasonable period, deletion of these constituents may be considered.

Response L-173: See Response L-171.

L-174 2. The Quarry analyte list should be more representative of the identified contaminants of concern as listed in the *Baseline Risk Assessment for the Quarry Residuals Operable Unit of the Weldon Spring Site, Weldon Spring, Missouri, April 1997.*

Response L-174: The list of analytes was presented in the *Remedial Design/Remedial Action Work Plan for the Quarry Residuals Operable Unit*, the document under CERCLA for presenting the design criteria for the long-term monitoring program for the QROU. This document was approved in January 2000. The parameters listed in the *Baseline Risk Assessment* are contaminants of potential concern, which were identified in the remedial investigation. This list of parameters was evaluated for human and ecological health effects. The results of the risk assessment indicated the estimated radiological risk for a hypothetical resident from exposure to uranium in groundwater was outside the EPA acceptable risk range. Nitroaromatic compounds are included in the list of analytes because 2,4-DNT exceeds the Missouri State Water Quality Standard, which was identified as an ARAR.

L-175 Table 3-6

1. Page 3-17, Potential Disposal Cell Event Scenarios, page 3-17, the settlementinduced cracking of the radon/infiltration barrier section does not clearly outline how this will be documented. As stated in comment 5, DOE shall further clarify how this settlement will be documented.

Response L-175: DOE will provide additional detail in Appendix D of the next version of the LTS Plan.

L-176 2. Why are Tc-99, Np and Pu not included? While quarterly sampling for these constituents may not be needed, at the least annual checks should be made. If detects are low to non-detect over a reasonable period, deletion of these constituents may be considered.

Response L-176: See Response L-171.

L-177 3. Page 3-17, Potential Disposal Cell Event Scenarios, page 3-18, the rock cover deterioration section outlines when the rock may be replaced. DOE shall explain in detail how the inspector will visualize the percentage of rock degradation. Also, the inspection checklist does not include a section for the inspector to document this yearly degradation.

Response L-177: See Response L-175.

L-178 4. Page 3-17, Potential Disposal Cell Event Scenarios, page 3-19, the abnormal functioning of the leachate collection and removal system outlines response actions for the leachate collection and removal system. DOE shall incorporate the state and federal requirements for the Action Leakage Rate exceedances. The last sentence states, "If fluid accumulates in the sump secondary containment to the extent that trend analysis indicates that removal may be required within 12 months or if fluid levels rise and then begin to fall, DOE will determine the source of the fluid, the cause of the fluid level fluctuations, and necessary corrective action." If any fluid collects in the sump secondary containment, this liquid shall be removed as soon as practical and the source determined and repaired. This section shall be revised accordingly. Page 2-19, first and second paragraphs shall also be revised to include corrective action if the sump secondary containment acquires any fluids.

Response L-178: Text will be revised to include a discussion of responses to exceeding the Action Leakage Rate. See Response L-71 regarding performance of the gravel drainage and collection system.

Figures

L-179 Figure 2-3 & Figure 2-4

1. An approximate mean sea level datum for the Missouri River could be shown on the cross-sections to assist in visualizing vertical change between the sites and possible discharge to Missouri River.

Response L-179: See Response L-43.

L-180 Figure 2-4

1. This figure incorrectly identifies the bedrock at the bottom of the quarry as Kimmswick Limestone. The bottom of the quarry extends down into the Decorah Group as stated in the text in paragraph one page 2-9. The figure should be revised. There is a typographical error in the spelling of "Fined-Grained Alluvium". The word "Fined" should be spelled *Fine*.

Response L-180: Figure 2-4 is a representation of the geologic cross section through the north end of the quarry, based on borehole logs. The Decorah Group was not exposed in that portion of the quarry. DOE will revise the text as suggested.

L-181 Figure 2-9.

1. Scale is too small to be easily read on the document available from the internet posting. Ultimately, consideration should be given to larger drawings to convey information contained in this figure.

Response L-181: See Response A-120.

L-182 2. The map depicts the extent of uranium contamination but only that above the adopted Maximum Contaminant Level. It should be revised to show all areas of residual contamination above background. Similar drawings should be included for soils and sediments with residual contaminants at levels above background.

Response L-182: Although uranium concentrations greater than background may exist at the chemical plant, only groundwater exceeding a regulatory or risk-based limit is required to be addressed under CERCLA. DOE applies the same rationale for soils and sediments. The figures will remain as presented.

L-183 Figure 2-10.

1. Same comment referencing TCE as 2-9.

Response L-183: Only groundwater exceeding a regulatory or risk-based limit is required to be addressed under CERCLA. The figures will remain as presented.

L-184 Figure 2-11

1. Same comment referencing Nitrate as 2-9.

Response L-184: See response L-183.

L-185 Figure 2-12

1. Same comment referencing 2,3-DNT as 2-9.

Response L-185: See response L-183.

L-186 Figure 2-16.

1. The location of the background surface water sampling location, SW-2007, shall be identified.

Response L-186: Agree.

L-187 Figure 2-18.& Figure 2-19.

1. Indicate in the legend that there are survey monument and identifiers in the figures. These monuments could not be found on the figures. In addition, the legend indicates there is a note 1 and no notes could be found on the figure. Please explain.

Response L-187: DOE will add survey monuments to the figures. These were not available when the figures were created. DOE suspects the commentor is referring to the boundary monument symbol with the identifier "1" next to it. This was included to indicate that boundary monuments will be included in the drawing when location information becomes available.